EXCURSION TO SANDRINGHAM.

I AM pleased to say that our excursion to Sandringham, on Saturday, 26th September, proved a very successful one. Owing to the heavy rainfall in the middle of September, and the following warm days, plant life was in a well-advanced state. About eighty species of the plants found on this part of the Victorian coast were seen in flower, thus giving those who are beginners in the study of plant life a splendid opportunity of securing a great number of species, as an encouraging start for a collection. Indeed, it was a great pleasure to see what keen interest the fifteen members of the excursion took in examining and collecting specimens of the flora surrounding them.

Leaving the station at Sandringham, we followed the road to Beaumaris for a few hundred yards, and then, turning to the left into the open country, entered the Tea-tree scrub near the Red Bluff, through which we proceeded as far as Black Rock. Then, as time did not permit us to go further, we decided to return to Sandringham, collecting partly on the sea coast and partly on the slope rising from the shore.

Before proceeding further, I would like to offer some explanation of the reasons for the conditions peculiar to this coastal flora. It is at once observable that the Sandringham flora presents quite a different appearance from that of more inland parts, and that the prevailing species are either of a succulent nature, occurring principally near the coast, or they are of a spinescent nature, small and narrow leaved.

Soil and climate play an important part in determining the character of a flora in general, and especially of a small local flora. They are the causes by which some species are distributed chiefly in certain regions, whilst in others with different soil and climatic conditions they are either missing or occur in a modified form. It seems as if plants which have the same claims on climate and soil form a "fellowship," taking up, with united strength, the struggle against the unfavourable conditions to which they are exposed, or enjoying together such advantages as Nature has provided. In the flora of Sandringham we observed three of these fellowships.

As the sea forms a natural barrier to phanerogamous plant life, I will speak first of all about those plants which brave the inclemency of wind and wave, and, so to speak, form the outposts of the flora further inland. In the poor, sandy soil which stretches only a few yards in width along the sea we noticed *Atriplex cinereum*, a species belonging to the Salsolaceæ, in solitary patches, while *Mesembrianthemum australe*, *M. æquilaterale*, *Tetragonia implexicoma*, and *Rhagodia billardieri* dare not go too near the sea, but are chiefly found on the partly rocky, partly sandy slope,

intermingled with small bushes of *Myoporum insulare*, *M. viscosum*, *Styphelia richei*, and *Alyxia buxifolia*. Nature wisely provided all these species with a great succulence or leathery consistency in their foliage, in order to resist effectively the great dryness of the soil and the hot temperature which frequently occurs during the time of flowering in this coastal district. Numerous small bushes of *Leptospermum lævigatum*, with its dainty white flowers, cover the slope, whilst here and there, in small clusters, we found *Lasiopetalum baueri*, the whole overshaded at intervals by specimens of *Casuarina quadrivalvis*. All these plants, growing on the slope and forming there the prevailing vegetation, are living in a community that differs in appearance from the next group, in which the Coast Tea-tree, *Leptospermum lævigatum*, is the prominent feature.

Immediately on the edge of the slope, the Tea-tree, being arborescent, forms a belt of dense scrub of varying width, having for companions *Acacia longifolia*, *Casuarina quadrivalvis*, and *Banksia integrifolia*, on which we often noticed the climbers *Clematis microphylla* and *Cassytha pubescens*, both at this time in fruit, with *Muehlenbeckia adpressa* in flower. On the edge of the slope, where the Tea-tree does not form a compact mass, we found Mesembryanthemum, Myoporum, Styphelia, Rhagodia, and Tetragonia—a repetition of the first fellowship—while in the shade of the Tea-trees, where the sandy soil has been improved through the old leaves falling from the trees year after year, the orchids *Caladenia carnea*, *Pterostylis curta*, *P. concinna*, *Diuris longifolia*, *Acianthus exsertus*, and *Corysanthes pruinosa* find the necessary conditions for their life.

The vegetation growing on the slope and this of the second fellowship show a considerable overlapping of the associated species, but this condition does not occur further inland, where the transition to the open ground is more or less fairly well marked.

The third fellowship is composed of entirely different species, which, on principle, will not accept the shelter which the Tea-tree offers them close by. In fact, if we strike in this part a separated group of Tea-trees, we notice that the flora under them does not consist of the same species as those growing around them. The prevailing species do not like the shade at all. Most of them are well marked by their spinescent leaves, thus having the surface area greatly reduced. This we observed in *Hakea nodosa*, *H. ulicina*, *Acacia oxycedrus*, *A. juniperina*, *Isopogon ceratophyllus*, *Davesia ulicina*, *Epacris impressa*, and *E. obtusifolia*. As the sandy soil here is very dry, and the transpiration, owing to the dry air, is so great, the transpiring foliage must be reduced to a minimum in order to maintain the balance and allow the plant to utilize the scanty supply of water to the

greatest advantage. We also observed the reduction in the size of foliage in forms such as *Ricinocarpus pinifolius*, *Leptospermum scoparium*, *L. myrsinoides*, *Casuarina distyla*, the yellow-flowering *Aotus villosus*, *Dillwynia cinerescens*, *D. ericifolia*, *Acacia suaveolens*, and others. Wherever we set our foot we met with the bright yellow-flowered Hibbertias—*fasciculata*, *stricta*, and *diffusa*—with *Goodenia pinnatifida*, and the white-flowered Pimeleas—*humilis*, *phylicoides*, and *octophylla*—the last-named species well provided with a dense coat of hairlets, in order to successfully regulate the transpiration.

Where the soil is free of bushes or shrubs, herbaceous plants, well-known friends of the inland parts, such as *Hypoxis glabella*, *Brachycome graminea*, *Microceris forsteri*, *Craspedia richea*, *Hydrocotyle laxiflora*, and *Ranunculus lappaceus* seem to enjoy one another's company. Under the shelter of dwarf bushes of *Casuarina distyla*, *Banksia marginata*, and others, *Drosera menziesii*, *Platylobium obtusangulum*, and *Calostrophus fastigiatus* appear, whilst the climber *Cassytha glabella* grows exuberantly among the bushes.

Most of the species mentioned bear white or yellow flowers, which colours predominate in the flowers of the Sandringham flora at this time of the season. But this want of variety of colour is sometimes interrupted by the occurrence of more highly coloured species, such as *Glossodia major*, *Caladenia patersoni*, *Thelymitra antennifera*, *Prasophyllum elatum*, *Candollea serrulata*, *Arthropodium strictum*, *Patersonia glauca*, *Dianella revoluta*, *Wahlenbergia gracilis*, *Chamæscilla corymbosa*, and the scarlet creeper, *Kennedya prostrata*. In places where the soil retains the moisture for a considerable time during the year we collected *Utricularia dichotoma*, *Polypompholyx tenella*, *Ranunculus aquatilis*, *Lymnanthemum exaltatum*, and *Drosera spathulata*. Fine specimens of the grass *Stipa semibarbata* frequently rise above the low shrub vegetation. Of representatives of cryptogamic plant life we found the ferns *Lindsaya linearis* and the cosmopolitan *Pteris aquilina*.

My report is rather a lengthy one, as, in writing it, I have not confined myself to merely mentioning the different species we found in bloom, and which pleased us by their beautiful forms or other peculiarities, but have taken the opportunity to try and point out that even a superficial observation of a flora should create such an interest in the observer as to cause him to study the plants, not only as individuals, but also in the relationship which the different species have one to another.—G. Weindorfer.